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of the International Geological Congress as erroneous. In the June number of the *American Geologist*, p. 386, will be found an accurate print of the official type-written notes of that meeting by the secretary, Professor H. S. Williams, signed by him, and sent to me with the request for my vote on the question of appealing to the bureau to change the place of meeting. This official statement establishes, first, that of those present, Powell, Dutton, Gilbert, Hague, Marsh, Walcott, and Williams were officers of the United States Geological Survey, and Cope, Hall, Lesley, Stevenson, Whitfield, Winchell, and Frazer were not. The above comprised all who were present. Of those who were not members of the United States Geological Survey, Lesley, Stevenson, Whitfield, and Winchell voted for the submission of the question to the bureau.

Capt. Dutton of the United States Geological Survey did not vote. If the vote was as stated, 9 to 3, who constituted the nine? Professor Lesley rightly says Hall, Cope, and Frazer voted "no."

So much for the vote being carried by the members of the United States Geological Survey.

Major Powell moved that "it is the opinion of the committee that the place should be changed" (see the secretary's official notes). I was also present at the meeting, and can testify to the accuracy of the secretary's notes. Major Powell did *not* oppose the selection of Washington, but remained silent while it was voted.

Only after the meeting was it given out that Major Powell did not wish the congress to come to Washington. He certainly did *not* urge "that nothing be done by the committee to cause such an action abroad" (i.e., the change).

Both Major Powell and the writer of the above note emulated Shakspeare's Julius Cæsar in putting off the crown, but, like that hero, ended by accepting it. PERSIFOR FRAZER.

Sea Girt, N.J., June 30.

BOOK-REVIEWS.

A Handbook of Descriptive and Practical Astronomy. II. Instruments and Practical Astronomy. By GEORGE F. CHAMBERS. 4th ed. New York, Macmillan, 1890. 8°. $5.25.

PROBABLY at no time have there been so many amateur astronomers with good telescopes as at present, and for all these would-be astronomers this book on astronomical instruments and their use will have an interest.

Chambers's "Astronomy" calls for no introduction to public attention at our hands, as the fact that this is a fourth edition testifies; but it may be well to repeat, what we announced when noticing the first volume of this new edition some weeks since, that the revision this time will result in the production of several distinct volumes, each treating of some special phases of astronomical science. It is thus that the present volume is limited to instruments, their employment in observations, and the proper mounting and housing of them.

Every one who knows the possessor of a good telescope knows how desirous this possibly happy personage is to have his instrument where it can be used. To meet this very want, our author has introduced a number of plans for small observatories, suggested not only by his own experience, but also by that of several of his professional friends. We feel sure that these will be eagerly sought by the amateur astronomers of this country, as well as by those of Great Britain, for whom they are specially intended.

But it must not be supposed that America has been neglected, for good descriptions are given of some of our newest and best observatories.

One chapter is devoted to a history of the telescope, which gives a completeness to the work, and is likely to furnish answers to the queries of many a questioning visitor.

The use of the spectroscope in astronomical work, which has led to so many important results, and which has so much fascination for those who have not the time to follow up the older astronomy, is cared for in several chapters.

We commend this book, and trust its use may help a few on this side of the water to a more intelligent use of their time and their opportunities, so far as they have available instruments, in developing some really important investigation in astronomical physics. The play of seeing more clearly than with the naked eye the features of the "man in the moon" soon ceases to give pleasure, and bears no proportion to the real delight of securing some small addition to the world's stock of knowledge, which can be had as the result of some intelligent work. Let those who wish for this delight secure a copy of the book here noticed, that they may know more of what is within their reach.

The True Grasses. By EDUARD HACKEL. Tr. by F. Lamson-Scribner and E. A. Southworth. New York, Holt. 8°. $1.50.

THIS is a good translation of Professor Hackel's valuable contribution to *Die natürlichen Pflanzenfamilien*, that great German publication on the natural families of plants edited by Dr. Engler and Dr. Prantl. As Professor Hackel stands among the foremost agrostologists, his work, expressing as it does the latest and most authoritative views upon the subject, is especially valuable; and, as it contains so much that is of practical importance, we are glad to see it made available to English readers.

The work embraces the grass family as a whole, and enumerates the best-known economic species and their uses. It discusses the structure and morphology of the grasses and their arrangement into tribes and genera, and points out their characters in a manner that will enable one to classify readily any grass that may come into his hand. For the benefit of persons unfamiliar with botanical keys, an illustration of the manner of using the keys of analysis is given in a brief introductory chapter; and a full glossary and index are appended, adding much to the usefulness and value of the work, especially for private students and general readers. The illustrations, of which there are upwards of a hundred, are mainly reproductions from the originals in the German work, though a few were drawn especially for this translation.

The Elements of Machine Design. 11th ed. By W. CAWTHORNE UNWIN. New York and London, Longmans, Green, & Co. 16°. $2.

THIS admirable and unique treatise on the elements of the work of the mechanical engineer designing machinery has now been in use in schools and offices on both sides the Atlantic for some years, and has been repeatedly revised and continually extended, until, from a little volume of perhaps three hundred pages, it has grown to two volumes of larger extent; and a third part is more than half promised by its distinguished author. It is attempted by its writer to give a fairly complete account of the methods of proportioning parts of machinery, and especially of that representative machine the steam engine, such as are in use in the best practice of the most successful builders, and such as are at the same time sanctioned by the best scientific authority. The work is in some respects, in English, a counterpart of that of Reuleaux in the German; but it is more directly adapted to the needs of the practitioner, and the custom and practice of the shops. It is a success, as is well indicated by the extent to which it has been adopted as a handbook and as a text-book, and by its rapid sale.

It gives a concise account of the materials used by the engineer; describes the various straining actions met with in machines; exhibits the results of research and experience as to straining action in structures and elements of machines; summarizes the results of latest experiments upon the strength of the several kinds of riveted joints, as used in boiler-work; determines the proportions of bolts, keys, and other connecting pieces, of journals and pins, and shafts and gearing. The principles of friction are applied in the determination of the proper proportions of bearings, and to the measurement of the efficiencies of machinery; while belting and rope transmission are given extended study. The second volume will deal with the details of parts of engines and machinery, and is promised for some time during the coming season. The third part will be devoted to the design of complete machines.

The book is brought up to date in a very satisfactory manner. The chapter on riveting is given large extent, and includes the results of the experiments of its author on riveting, as reported to the Institution of Mechanical Engineers. That on friction is the